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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/647,965	05/24/2001	John Hiscott	A33606-PCTUS	7406

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EXAMINER	
MCKELVEY, TERRY ALAN	
ART UNIT	**PAPER NUMBER**
1636	21

DATE MAILED: 07/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/647,965	HISCOTT ET AL.	
	Examiner	Art Unit	
	Terry A. McKelvey	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the corresp nd nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 December 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21,26,27 and 32-38* is/are pending in the application.

4a) Of the above claim(s) *3,8-16 and 35-38* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-7,17,18,26,27 and 32-34* is/are rejected.

7)☒ Claim(s) *19-21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 July 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *12* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group II, claims 1-2, 4-7, 17-21, 26-27, and 32-34 in Paper No. 16, filed 12/2/02 is acknowledged. The traversal is on the ground(s) that the applicant does not seek to claim known IRFs, but instead IRFs that have been modified at at least one serine or threonine phosphoacceptor site and thus should be entitled to claim his invention without being restricted to specific exemplified embodiments. This is not found persuasive because the applicant is attempting to claim known IRFs, not just one, but several different IRF proteins which come from independent genes. As shown by the following rejections, the claimed invention lacks the same or corresponding special technical feature and thus a lack of unity between the invention drawn to modified IRF-3 and IRF-7 is properly maintained.

The applicant also argues that new claims 35-38 should be joined to elected Group II, because for claims 37-38, they are directed only to those nucleotides that encode the claimed protein. This argument is not persuasive because claims 35-36 are drawn to a chimeric protein that has different chemical, structural, biological, and physical properties from the elected

modified IRF-7 protein and thus constitute a new Group because there is no unity of invention for the reasons described above. Claims 37-38 are drawn to nucleotide sequences encoding IRF proteins which have different chemical, structural, biological, and physical properties from the elected modified IRF-7 protein, and properly belong to Group III or Group IV drawn to nucleotide sequences encoding modified IRF protein. The requirement is still deemed proper and is therefore made FINAL.

Claims 3, 8-16, and 35-38 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 16.

Priority

Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application); the disclosure of the invention in the parent application and in the later-filed application must

be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

In the instant case, the application claims priority to PCT/CA99/00314, filed 4/7/99. A review of PCT/CA99/00314 as filed did not reveal a description of the claimed invention drawn to a modified IRF protein ... with the proviso that where said IRF protein is IRF-3, said at least one modified phosphoacceptor site does not comprise Ser-385 or Ser-386. There is no description of the modified IRF proteins having this particular limitation or that the specification set forth a description that modified IRF-3 having either specific modification is known in the prior art (and thus the limitation excluding known prior art can be added without adding new matter). The claims drawn to this limitation thus constitutes new matter during the prosecution (filed on 1/6/2000 during the prosecution of PCT/CA99/00314 according to the IPER). Accordingly, claims 1-2, 5-7, 26-27, and 32-34 are only accorded the priority of the filing date of the instant application, 5/24/2001.

Drawings

Color photographs and color drawings are acceptable only for examination purposes unless a petition filed under 37 CFR 1.84(a)(2) is granted permitting their use as acceptable drawings. In the event that applicant wishes to use the drawings currently on file as acceptable drawings, a petition must be filed for acceptance of the color photographs or color drawings as acceptable drawings. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR 1.17(h), three sets of color drawings or color photographs, as appropriate, and an amendment to the first paragraph of the brief description of the drawings section of the specification which states:

> The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the U.S. Patent and Trademark Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings have been satisfied.

In the instant case, the formal drawings filed 7/24/01 contain at least one color drawing.

Specification

The abstract of the disclosure is objected to because it is not by itself on a separate sheet as required. Correction is required. See MPEP § 608.01(b).

Claim Objections

Claims 19-21 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim may not depend on another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 26-27 and 32-34 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention.

The claim is drawn to a pharmaceutical composition comprising an effective amount of a modified IRF protein (and a pharmaceutical carrier). The only disclosed use for these compositions is for treatment of a large number of diseases including influenza infection, herpes infection, hepatitis infection, HIV infection, and cancer (which reads on over 100 different diseases).

The nature of the invention is very complex because it is a composition that is to be used to treat illness. The specification teaches that the composition can be used to treat diseases including influenza infection, herpes infection, hepatitis infection, HIV infection, and cancer. The list of possible diseases to treat is **very large** and concerns treating very complex diseases such as cancer and specific viral diseases, including HIV. These are all very complex diseases, that although some other types of treatments exist for these diseases, no type of treatment exists for these diseases based upon a similar broad class of compound, because the instant claims are drawn to treatments using whole, altered transcription regulatory factors. For example, although there exists some treatments for HIV infection, there are no general or specific treatments based upon administration of a protein

that is a transcription factor, let alone a transcription factor structurally related to IRF proteins.

The state of the prior art is that there is no enabled teaching in the prior art of a transcription factor protein being administered to a human patient in order to treat any disease such as those claimed.

Neither the art nor the specification teaches a working example of administration of the claimed pharmaceutical composition to a patient that successfully treats any disease as claimed.

There is no guidance in the prior art and only slight, prophetic generic guidance in the specification concerning how to make and administer the claimed composition to treat disease. The specification merely teaches to use a pharmaceutically acceptable carrier (mentioning some of those known in the prior art) with the protein and administer the composition using one of the common methods and dosages taught in the art as being a possible administration method to try. The specification does not disclose, beyond a very generic description, the intended patients (treatment of a large number of very different diseases is envisioned). For example, the specification fails to teach how to specifically make and use the claimed composition for the treatment of cancer versus HIV infection, two very different

diseases that presumably would require very different pharmaceutical formulations and administration methods. This overall guidance is very slight because it can be considered to be merely speculative because the effective use of a protein having in vitro biological activity as a drug to treat a disease is extremely unpredictable as taught by Caldwell.

Caldwell is cited to show the unpredictability in the art concerning how to make and use a drug. Caldwell teaches that drug action is the result of interaction with target sites, for both desired and undesired actions, modulated by the transfer processes, the pharmacokinetic variables of absorption, distribution, metabolism and elimination, by which the drug enters and leaves the body. This reference teaches that there is far more inter- and intraspecies variation, in animals and humans, in the factors influencing the nature and extent of internal exposure, than in the sensitivity of drug targets and this pharmacokinetic variability is the cause of major problems in drug development. Caldwell also teaches that failure to take these pharmacokinetic defects, including poor absorption, very short or very long half-life, enzyme induction and high first pass effect, into consideration can cause expensive delay and/or failure during development. This reference thus shows that drug development is very unpredictable, requiring the consideration

of many unpredictable factors in determining how to make and use the drug. These very necessary, but unpredictable factors are not taught in either the art or the specification for the specific administration of the claimed composition in vivo for disease treatment, the only intended use for the claimed pharmaceutical compositions.

In view of the large quantity of experimentation necessary to determine the unpredictable parameters necessary for the pharmaceutical composition to function successfully in vivo, the lack of significant direction or guidance presented, the absence of working examples, the breadth of the claims which includes the treatment of very many, very different diseases, and the unpredictable and undeveloped state of the art with respect to formulating an IRF protein into a functional drug that can treat a condition in vivo, let alone a large number of very different conditions, it would require undue experimentation for one skilled in the art to practice the claimed invention.

Amending the claims to recite "A composition comprising ... and a carrier." would be remedial in overcoming the instant rejection.

Claim Rejections - 35 USC § 101

35 U.S.C. § 101 reads as follows:

> "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".

Claims 1-2, 4-5, and 17-18 are rejected under 35 U.S.C. § 101 because the claimed invention is drawn to non-statutory subject matter.

The claims are drawn to a modified interferon regulatory protein, including modified IRF protein modified by phosphorylation. IRF protein modified by phosphorylation as claimed read on natural IRF protein from cells that have been naturally IFN stimulated and thus constitutes products of nature that are not statutory subject matter because they fail to show the "hand of man" in their construction. Amending the claims to be drawn to isolated IRF protein would be remedial.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Sharf et al (Applicant reference CN).

Sharf et al teach carboxyl-terminal deletions of ICSBP protein, which modify serine or threonine phosphoacceptor sites in the C-terminus by deletion, resulting in a defect in its repression ability, thus causing an increase of cytokine gene activation (page 9787, column 2-page 9788, column 1). This reference also teaches IRF-1 that becomes phosphorylated in response to IFN treatment, which reads on IRF-1 that has one or more serine or threonine phosphoacceptor sites in the C-terminus phosphorylated because it is those phosphoacceptor sites that are naturally phosphorylated by IFN stimulation.

Claims 1-2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoneyama et al (Applicant reference CY).

Yoneyama et al teach IRF-3 protein with substitutions of alanine singly or in combinations at the serine phsophoacceptor sites in the C-terminus (page 1089, column 2-page 1090, column 1).

Claims 1-2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Zhang et al (Applicant reference DB).

Zhang et al teach IRF-7 protein produced in cells stimulated with IFN (which thus would inherently modify IRF-7 by phosphorylation at the phosphoacceptor site) (for example, Materials and methods and Figure 7).

Claims 1-2, 4-5, and 17-18 are rejected under 35 U.S.C. 102(a) as being anticipated by Zhang et al (Applicant reference DB).

Zhang et al teach IRF-7 protein produced in cells stimulated with IFN (which thus would inherently modify IRF-7 by phosphorylation at the serine or threonine phosphoacceptor sites, such as Ser-477 or Ser-479) (for example, Materials and methods and Figure 7).

Claims 1-2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Au et al (Applicant reference AB).

Au et al teach IRF-3 protein made in cells stimulated by IFN treatment, which inherently results in phsophorylation at the serine or threonine phosphoacceptor sites, and which activates cytokine gene activation (page 11660).

Claims 1-2 and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al (Applicant reference BS).

Lin et al teach IRF-3 modified by phosphorylation and IRF-3 modified by asp modification of the serine or threonine phosphoacceptor sites including other than Ser-385 or Ser-386 in the C-terminus, generating a constitutively, more active IRF-3 (abstract; page 2988).

Claims 1-2, 5-7, 26-27, and 32-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiscott et al (WO 99/51737).

Hiscott et al teach IRF-3 protein which have been modified at a serine or threonine phosphoacceptor site, by replacement with asp, including those which do not comprise Ser-385 or Ser-386 modification (claim 6). Pharmaceutical compositions comprising the modified IRF-3 protein are also taught (claim 20), which also reads on a commercial package because addition of instructions to a composition does not impart any additional patentable limitation.

Conclusion

No claims are allowed.

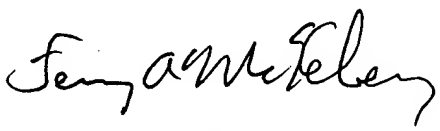
Certain papers related to this application may be submitted to Art Unit 1636 by facsimile transmission. The faxing of such papers must conform with the notices published in the Official

Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 C.F.R. § 1.6(d)). The official fax telephone numbers for the Group are (703) 308-4242 and (703) 305-3014. NOTE: If Applicant *does* submit a paper by fax, the original signed copy should be retained by applicant or applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED so as to avoid the processing of duplicate papers in the Office.

Any inquiry concerning rejections or other major issues in this communication or earlier communications from the examiner should be directed to Terry A. McKelvey whose telephone number is (703) 305-7213. The examiner can normally be reached on Monday through Friday, except for Wednesdays, from about 7:30 AM to about 6:00 PM. A phone message left at this number will be responded to as soon as possible (i.e., shortly after the examiner returns to his office).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Remy Yucel can be reached on (703) 305-1998.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.



Terry A. McKelvey, Ph.D.
Primary Examiner
Art Unit 1636

June 29, 2003